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WHAT IS CLAIMED IS!

CLAIMS

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1. A device for determining location of a fault in an underground cable causing an earth leakage path from an internal conductor to earth at the location of the fault whereby, when
 5 signal is applied to the conductor, earth leakage signal flows between the earth and conductor at the location of the fault, wherein the applied signal is a multi-frequency signal having at least two frequency components, the device having probe means positionable to receive the earth leakage signal, and means for rectifying a first component of the earth leakage signal
 10 corresponding to one said frequency component of said applied signal, multiplying the rectified first component of the earth leakage signal with a second component of the earth leakage signal corresponding to another said frequency component of the applied signal and, from the result of said multiplication, determining the direction from the device to the fault.

2. A device as claimed in claim 1, wherein said multiplication is effected as an array
 15 multiplication of sets of time-spaced samples of the first and second components of the earth leakage signal.

3. A device as claimed in claim 1 or claim 2, incorporating means for detecting and removing signal artifacts due to switching transients or other external interference.

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4. A device as claimed in any preceding claim, having means for determining a confidence indication, indicating a degree of reliability of said result.

5. A device as claimed in claim 4, wherein said means for determining a confidence
 25 indication operates to determine said confidence indication by applying one or more selected criteria to said result.

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6. A device as claimed in claim 5, wherein selected criteria is or includes the ratio between maximum positive or negative excursions of said result, and the means of said result.

7. A device as claimed in claim 5 or claim 6, wherein said selected criteria is or includes

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the signal-to-noise ratio of the result signal and/or said signal components.

8. The device as claimed in claim 5, claim 6, or claim 7, wherein said selected criteria is or includes the absolute signal strength of the result signal, and/or said signal components.

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9. A method for determining location of a fault in an underground cable, wherein signal is applied to the cable to cause generation of an earth leakage signal from an internal conductor of the cable to earth, at the location of the fault, the applied signal being a multi-frequency signal having at least two frequency components, receiving the earth leakage signal, and
10 rectifying a first component of the earth leakage signal corresponding to one frequency component of said applied signal, multiplying the rectified first component of the earth leakage signal with a second component of the earth leakage signal corresponding to another said frequency component of the applied signal and, from the result of said multiplication, determining the direction from the device to the fault.

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10. A method as claimed in claim 9, wherein said multiplication is effected as an array multiplication of sets of time-spaced samples of the first and second components of the earth leakage signal.

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